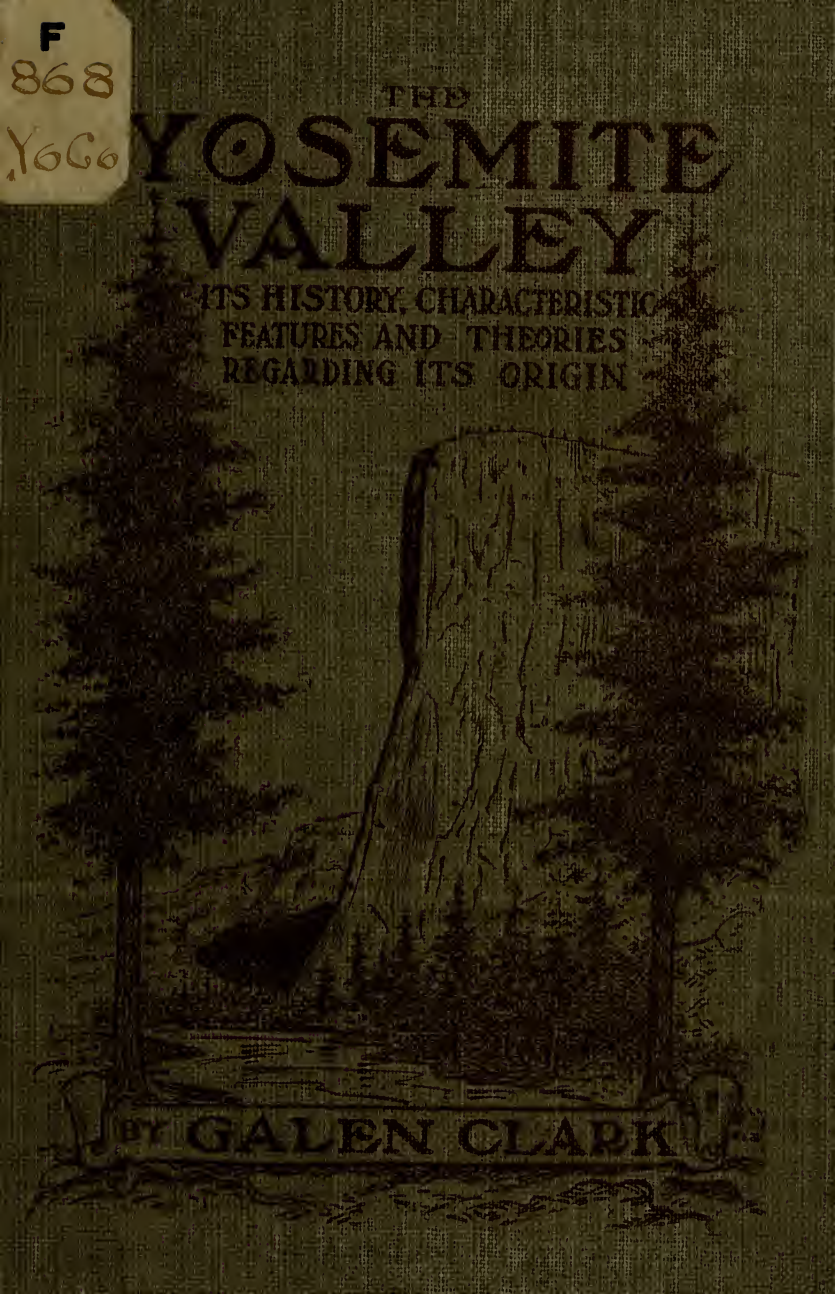
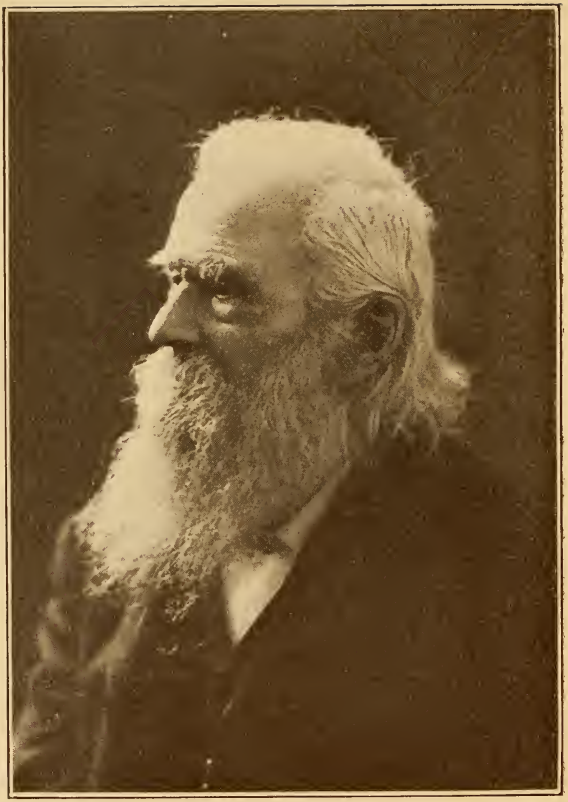
THE YOSEMITE VALLEY

ITS HISTORY, CHARACTERISTIC FEATURES AND THEORIES REGARDING ITS ORIGIN



BY GALEN CLARK



Photograph by Shaw & Shaw

Galen Clark

THE YOSEMITE VALLEY

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By GALEN CLARK

Discoverer of the Mariposa Grove of Big Trees, Author of "Indians of the Yosemite," "Big Trees of California," and for many years Guardian of the Yosemite Valley.

Illustrated from Photographs by George Fiske.

YOSEMITE VALLEY, CALIFORNIA
NELSON L. SALTER
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CONTENTS.

ILLUSTRATIONS.

YOSEMITE THE MASTERPIECE.

By W. A. CROFFUT.

Oh, words, how poor, and vain, and weak,
When of the masterpiece we speak,
Of emerald vale and starry peak,
Thy glories, grand Yosemite!

What know we of the times remote,
When on Azoic seas afloat
Great Nature sailed her granite boat,
And dreamt about Yosemite?

What demon thrones were upward hurled,
What fiery flags were high unfurled
From bastions of a ruined world,
Beneath thy gulf, Yosemite,

When Vulcan, tired of labors tame,
Lighted his furious forge of flame
And smote young Terra's molten frame,
And fashioned wild Yosemite!

We only know this Titan's home
Of ribboned fall and purpled dome
Is crystal of the primal foam
That bathed thy beach, Yosemite.

Fair jewel,—gold, and red, and brown,—
In splendor shining softly down,
The Kohinoor of Nature's crown—
Magnificent Yosemite!

THE YOSEMITE VALLEY

INTRODUCTION AND SKETCH OF THE AUTHOR.

HUNDREDS of thousands of Yosemite visitors were grief-stricken a few weeks ago when it was announced that Galen Clark, the discoverer, in 1857, of the Mariposa Grove of Big Trees, had "joined the innumerable caravan" at the rare old age of ninety-six, and in full possession of all his senses and perfect storehouse of mind.

The writer had known Galen Clark intimately and had met him often for forty-odd years, and had deemed him one of the most agreeable and entertaining human beings he had ever met, and, altogether, one of the most benignant characters.

Mr. Clark was a New Englander, and came to California, via the Isthmus of Panama, in 1853, and to the mining

camps between Sonora and Mariposa the year following. He had been carefully and healthfully brought up, but the insidious conditions of the Isthmus, or in the mines, had brought on a pulmonary disorder of a serious nature, and a friendly physician advised him to seek an abode among the stately conifers and pellucid waterways of the High Sierras. In the spring of 1857 he built himself a log cabin in the beautiful valley now known as Wawona, which for nearly twenty years was known as "Clark's Station," and in a few months discovered the Mariposa Grove of Sequoias, only eight miles distant from his abode.

Mr. Clark was a member of the first Board of Commissioners for the care of the Yosemite Valley and Mariposa Grove of Big Trees, and was the "Guardian of the Valley" for many years afterward; and for more than half a century he had lived in the Valley or at Wawona, and became familiar with

every species of shrub and tree, grass and flower, and with the dimensions of every elevation and fall of water. He won the respect and friendship of all with whom he came in contact, including the tribes of Indians which then inhabited that region and who still remain in small and scattered bands as one of the interesting features of the Yosemite Valley.

In 1904, when ninety years of age, Mr. Clark published a book on the Indians of the Yosemite, which was followed in 1907 by a volume on the Big Trees of California. These books are written in a simple and entertaining style and have proven valuable contributions to the literature of Western America. They have been widely read and are regarded as the most authoritative works on the subjects of which they treat. So far as I know, Mr. Clark's experience has been absolutely unique in becoming an author at the age of ninety.

In this, his latest and most pretentious book, the manuscript of which he had personally handed to his printer less than two weeks before being summoned to his last account, he succinctly and delightfully presents descriptions of all the cataracts and waterfalls, spires and domes, trees and flowers, islands and lakes, rivers and vales, and the multiplicity of other objects which have made the Yosemite Valley the masterpiece of the scenic world.

This last publication of Mr. Clark has many aims, but its principal object is to furnish answers to the numerous questions asked by Yosemite visitors, not only with regard to the great scenic features of the Valley and the various theories which have been advanced to account for their origin, but also concerning the many beautiful and varied specimens of tree and plant life. The book therefore contains the correct name and a brief sketch of each flower, fern,

tree, shrub and grass; and a description of all the falls and domes and other elevations, with their names and altitudes, their significance in Indian minds, and much else of an interesting aboriginal study and belief. It has been the aim of the author to avoid infinitesimal detail and ponderosity; in other words, he has omitted nothing that should be presented, but has made a book that may be carried in almost any pocket and drawn upon for reference at any time and at any place. It is the gem of books on the Yosemite Valley and scintillates like a star.

Very naturally Mr. Clark descants on the cause or causes which led to the creation of the great gorge, a question which has perplexed so many savants and other scholarly men of science and observation; and while he summarizes to some extent the conclusions of Professors Whitney and Le Conte (whose deductions are diametrically in conflict

with each other) he advances a theory of his own which more or less harmonizes the views of Whitney, Le Conte, Davidson, Muir and other distinguished scientists and scholars, and also fits in palpably with all physical conditions. This may be regarded, I think, as the profoundest chapter in the book, and a feature that will elicit the admiration of all its readers.

The chapters descriptive of the flowering shrubs and flowering plants glow in all the colors of an Axminster; and these many blooms remind one of Milton's "leaves that strew the brooks of Vallombrosa." There are more than a score of these gorgeous floral inhabitants described, and many ferns. Surely, these chapters may be veritably termed the very "language of flowers." The descriptions of the trees, which embrace the yellow, sugar and black pines and tamaracks, the Douglas spruce and the fir, the cedars and the oaks, the cotton-

woods and the alder, the maple and the laurel, the quaking aspen and some others, are highly instructive and quite as bewitching as Emerson's essays on "the woods," which he termed "God's Temples."

The author's remains now sleep the everlasting sleep under a modest sarcophagus quarried from a fugitive granite boulder by his own hands, surrounded by trees and flowers, shrubs and vines. His was a good and warm and sympathetic heart, and he was always notably gentle and kind, radiant and lovable. He was strikingly pure and honest, for his word was as good and as unimpeachable as a bond.

There have been many noble Knights of the High Sierras, but Galen Clark was one of the noblest of all.

BEN C. TRUMAN.

Los Angeles,
May 2, 1910

GENERAL CHARACTERISTICS.

YOSEMITE VALLEY is nearly in the center of the State of California, and about midway between the western base and the summit of the Sierra Nevada Mountains.

The floor of the Valley, which is four thousand feet above the sea, is nearly a level area about seven miles in length and with an average width of one mile. This floor is nearly a mile in perpendicular depth below the general level of the adjacent region.

The top rim of the surrounding walls is irregular, culminating in craggy peaks, domes and pinnacles, between which it is carved into many fantastic forms of interesting and gigantic proportions, while Nature has been at work for thouands of years adorning and beautifying the great barren walls with trees and

shrubbery, flowering plants and ferns, wherever a root-hold could be obtained on every projecting ledge or open crevice containing a little moisture.

The floor of the Valley presents a scene of surpassing beauty, with its great variety of forest trees, flowering shrubbery, green meadows, wild flowers and ferns.

The Merced River flows its winding way from side to side through the length of the Valley. The Illilouette and Teneiya Creeks join the Merced at the extreme upper end, and the Yosemite, Bridal Veil and many other smaller streams from both sides, join the river lower down, all of them forming waterfalls and cascades of charming beauty in the early part of the season, when at their full volume, and many of them lasting throughout the summer.

Prof. J. D. Whitney, in his report as State Geologist, says, "The peculiar features of the Valley are, first, the near

EL CAPITAN
3,300 feet

approach to verticality of its walls; next, their great height, not only absolutely, but as compared with the width of the Valley itself, and, finally, the very small amount of talus at the bottom of the gigantic cliffs."

The late Samuel Bowles of the Springfield, Massachusetts, *Republican,* who was an early visitor to Yosemite on horseback by the way of old Inspiration Point, in writing home to his paper, says of the Valley:

"As well try to interpret God in thirty-nine articles as portray to you by word of mouth or pen, as well reproduce castle or cathedral by a stolen frieze or broken column, as this assemblage of national wonder and beauty by photograph or painting.

"The overpowering sense of the sublime, of awful desolation, of transcending marvelousness and unexpectedness, that swept over us as we reined our horses sharply out of green forests and

stood upon the high jutting rock that overlooked this rolling, up-heaving sea of granite mountains, holding far down its rough top this vale of beauty of meadow and grove and river! Such tide of feeling, such stoppage of ordinary emotions, comes at rare intervals in any life.

"It was the confrontal of God face to face as in great danger, in solemn, sudden death. It was Niagara magnified. All that was mortal shrunk back, all that was immortal swept to the front and bent down in awe.

"Niagara alone divides honors with it in America. Only the whole of Switzerland can surpass it."

VIEW FROM ARTIST'S POINT

DISCOVERY AND HISTORY OF YOSEMITE VALLEY.

THE Yosemite Valley was discovered and made known to the public by Major James D. Savage and Capt. John Boling, who, with a strong detachment of mounted volunteers from what was known as the Mariposa Battalion, went with friendly Indian guides to the Valley in March, 1851, to capture the resident tribe of Indians and put them on the Fresno Indian Reservation.

The first improved trail for saddle animals to Yosemite Valley was made by a livery firm in Mariposa, the Mann Brothers, in 1856. This trail led from Mariposa to the Valley by way of the South Fork of the Merced River, crossing the stream at a point now known as Wawona.

In 1857 the regular tourist travel to

Yosemite Valley may be said to have commenced, although a few persons had gone there in previous years since its discovery. All parties, at that time, went prepared with camping outfits.

The first house in Yosemite was built in the fall of the year 1856, and was opened the next spring as a saloon for the entertainment of that class of visitors who loved whiskey and gambling. The next year it was fitted up and used as a restaurant. Several years later it was enlarged, and known as Black's Hotel.

The first building erected for a hotel was built in 1859, and is now a part of the Sentinel Hotel premises, being known as the Cedar Cottage.

Most of the early visitors to Yosemite were Californians, and the number did not amount to one thousand in any one season until the completion of the Union Pacific and Central Pacific Railroads.

OVERHANGING ROCK, GLACIER POINT
3,250 feet

Soon after that the number increased to many thousands annually.

All the necessary supplies for the hotels and other purposes were taken into the Valley by pack mules from Coulterville and Mariposa, a distance of fifty miles, until the completion of the first wagon roads in 1874.

The main features and great variety of Yosemite scenery were early and widely made known throughout the civilized world by pen, press, and public speech, and have been many times portrayed by paint brush, camera and kodak; but no description, painting or photograph can give its vivid, thrilling, overwhelming life expression.

The officers in command of the military expedition which discovered Yosemite Valley in 1851, in their report to Governor McDougal, estimated the height of the most prominent parts of the walls around the valley at from twelve hundred to fourteen hundred feet. This is

about the height that most visitors estimate them as they see them on entering the Valley. When the actual heights were ascertained by civil engineers, with surveyor's transit, they were found to be more than double the heights estimated by the unaided eye.

Jarvis Kiel of Mariposa was the first engineer to make some of the actual heights known. He was followed by Prof. J. D. Whitney, State Geologist, with his assistant engineers. Still later came Capt. Wheeler and Lieut. McComb of the United States Engineering Department. There is very little variation in all these reported heights.

YOSEMITE FALLS
2,634 feet

THEORIES IN REGARD TO THE ORIGIN OF YOSEMITE.

"HOW was this wonderful valley formed?" is a question asked by thousands of visitors, and there have been three distinct theories advanced by different geologists on this subject.

Prof. J. D. Whitney, in his report as State Geologist, says:

"The Valley is too wide to have been formed by a fissure. Much less can it be supposed that the peculiar form of Yosemite is due to the erosive action of ice. A more absurb theory was never advanced than that by which it was sought to ascribe to glaciers the sawing out of these vertical walls and the rounding of the domes. In short, we are led irresistibly to the adoption of a theory of the origin of Yosemite in a way which has hardly yet been recognized as

one of those in which valleys may be formed, probably for the reason that there are so few cases in which such an event can be absolutely proved to have occurred.

"We consider that during the process of upheaval of the Sierra, or, possibly, at some time after that had taken place, there was at the Yosemite a subsidence of a limited area, marked by lines of 'fault' or fissures crossing each other somewhat nearly at right angles. In other and more simple language, the bottom of the Valley sunk down to an unknown depth owing to the support being withdrawn from underneath during some of those convulsive movements which must have attended the upheaval of so extended and elevated a chain, no matter how slow we may imagine the process to have been."

I have been informed that Prof. Silliman and some other noted geologists, who were among the early visitors to

Yosemite, conceived and advanced the theory that the Valley was formed by a great subterranean force causing a deep rupture in the surface of the earth, which in an unknown period of time has been filled up to the present floor of the Valley.

The third theory, and perhaps the most popular one at the present time, is that the origin and general formation of the Valley is due to the agency of glaciers. Clarence King, who was one of Prof. J. D. Whitney's topographical engineers in the survey of Yosemite Valley and the adjacent mountain range, was the first geologist to advance the opinion that Yosemite Valley was formed by glacial agency. In later years, Prof. Joseph Le Conte and other noted geologists, in their many visits to Yosemite and explorations in the High Sierras, and after examining the old glacial moraines, terminal, lateral and medial, still to be plainly seen on the floor of the Val-

ley, also the stria and other evidence of glacial erosion in many places high up on the walls of the Valley, and the glacial polish still in evidence on the rocks above the falls of all the large streams entering the Valley, together with the extensive areas of polished granite higher up in the range, came to the positive conclusion that the Yosemite Valley was formed by the agency of glaciers instead of either a local subsidence or a rupture of the earth's surface.

NORTH DOME
3,725 feet

THE AUTHOR'S THEORY.

DURING a residence of many years in Yosemite, and a careful observation of the structural formation of the great walls on each side and the great domes in connection therewith, it seems evident to me that there were two great forces which operated at different periods of time in the origin and formation of Yosemite Valley.

In some period of the earth's existence, while its granite crust in that locality was in a semi-plastic condition, by some great subterranean force of gases or superheated steam, its surface was forced up in places, forming these great dome elevations. In some instances this force was sufficient to burst open the surface and make a complete blow-out, forming a great chasm with vertical sides. The bursting open of two or more

of these great domes seems to have been the original agency in the formation of Yosemite Valley. I can imagine no other theory to account for the various lines of cleavage and fractures in the great walls of the Valley, some of them being vertical, some horizontal, and others in various degrees of inclination and curves.

In later years, during the glacial epoch, a portion of the great glaciers which covered this part of the mountain range completed the work by crushing the remaining rock material, filling up to a great extent the deep chasms and carrying out the surplus material, and at the end of the great ice age the Valley was left a great lake which in the course of time was filled up by disintegrated granite brought in by the flood waters from the higher mountains adjacent, leaving the main picturesque features of the Valley much as we see them now.

SENTINEL DOME,
Showing concentric rock formation

Ever since then Nature has been industriously at work growing trees, flowering shrubs and plants to adorn and hide from view, as much as possible, the awful desolation left by the melting glaciers; and by long exposure to the action of the elements for unknown thousands of years, to the expansion and contraction of countless summers and winters, large portions of the surface of the walls, which bore evidence of glacial erosion, have fallen away, and form the great piles of rock at the base of the cliffs on each side of the Valley.

One of Prof. Whitney's great objections to the glacial theory of the origin of Yosemite Valley was the lack of evidence of what became of the great amount of crushed rock material which must have been created in its formation. It is evident that most of this material must have been carried away in the form of glacial mud by the great stream flowing from under the glacier down through

the Merced Canyon to the San Joaquin Valley, which undoubtedly at that time was a great inland sea, and, when reaching the slack water of the sea, settled in a deposit which in the course of unknown years has been hardened into rock, forming elevated ridges near the Merced River, and much of what is called "hard pan" beneath the surface soil in the near vicinity.

All the great and smaller canyons of the rivers which head in the High Sierras, together with the whole western face of the Sierra Nevada range of mountains, have been forced by glacial action to contribute largely in the formation of the great plains of the Sacramento and San Joaquin Valleys. The dying glaciers have therefore bequeathed to California a vast empire of agricultural wealth as well as a crowning mountain diadem of unspeakable sublimity and grandeur.

THREE BROTHERS
3,830 feet

PROMINENT PEAKS AND DOMES IN YOSEMITE.

El Capitan.

AT the entrance to the Valley on the north side is El Capitan, a type of enduring massiveness, being an enormous block of solid granite thirty-three hundred feet in height, with a smooth vertical face of over one hundred and sixty acres in superficial area. In one place the top edge overhangs the base nearly one hundred feet. In a slight depression, about one thousand feet above the base, there is growing a lone pine tree which is by actual measurement eighty feet in height.

On another part of the face of El Capitan is plainly to be seen, in certain conditions of light, the figure of a man facing west, and apparently traveling in

that direction, clothed in a flowing robe and a low crowned hat. The old Indians of Yosemite called this figure To-tau-kon-nu-la, and held it in supreme reverence as a great chieftain of their remote ancestors.

On the crowning ridge of El Capitan, thirty-six hundred feet above the Valley, there is a juniper tree growing which is thirty-four feet in circumference, breast high.

Three Brothers.

The Three Brothers, thirty-eight hundred and thirty feet high, are a triple group of rocks which rise in steps, one back of the other, with a smooth, slant-

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KEY TO BIRDS-EYE VIEW ON OPPOSITE PAGE. (Drawing by Chris. Jorgensen).—1. Ribbon Fall. 2. El Capitan. 3. Three Brothers. 4. Yosemite Falls. 5. Lost Arrow. 6. Yosemite Point. 7. Royal Arches. 8. Washington Column. 9. North Dome. 10. Basket Dome. 11. Mt. Watkins. 12. Cloud's Rest. 13. Mirror Lake. 14. Half Dome. 15. Mt. Broderick. 16. Liberty Cap. 17. Little Yosemite. 18. Nevada Fall. 19. Panorama Rock. 20. Vernal Fall. 21. Grizzly Peak. 22. Glacier Point. 23. Union Point. 24. Sentinel Dome. 25. Sentinel Rock. 26. Cathedral Spires. 27. Cathedral Rocks. 28. Bridal Veil Fall. 29. Leaning Tower.

BIRDS-EYE VIEW
For key see opposite page

ing western surface. The extreme top of the highest one cannot be seen from the point where photographs are usually taken, but farther up the Valley it is plainly seen, and known as Eagle Peak, thirty-nine hundred feet high.

Three Graces. Cathedral Rocks.

On the other side of the Valley, opposite El Capitan, is another great group of rocks which, as seen from the west, is called the Three Graces. In general appearance these rocks resemble the Three Brothers. Farther up the Valley this same group presents a different appearance, and is known as the Cathedral Rocks.

Cathedral Spires.

Closely adjoining the Three Graces, but set a little farther back, are the two unique and graceful pinnacles called the Cathedral Spires. One of these is said to be twenty-five hundred and seventy-

four feet high, the other twenty-six hundred and seventy-eight feet.

These spires are isolated columns of rock standing out from, but connected at the base with, the main walls of the Valley. Two such symmetrical columns, so near alike and so near together, like two towers of a Gothic cathedral, form a very rare and interesting feature in mountain scenery.

Sentinel Rock.

Further up the Valley, on the same side, is an elevated point known as Sentinel Rock. Its height is thirty-one hundred feet. The walls of the Valley on each side of it slope back, leaving it standing squarely out with a perpendicular face of nearly two thousand feet, below which it descends at a steep angle to the floor of the Valley.

Glacier Point.

Near the upper end of the Valley is

SENTINEL ROCK
3,109 feet

the locality known as Glacier Point, thirty-two hundred and fifty feet high. From this elevated standpoint we get a fine view of all the upper part of the Valley and surrounding walls, also Vernal and Nevada Falls, and a grand and extensive panorama of the Sierra Nevada range.

Eagle Peak.

This peak, the tallest one of the Three Brothers, is thirty-nine hundred feet above the Valley floor. From this point we get the finest and most extensive view of the Valley, and also a part of the High Sierras in the distance.

Yosemite Point.

Yosemite Point, just east of Yosemite Falls, is thirty-two hundred and twenty feet above the Valley. Here also can be obtained a magnificent view of the Valley far below.

North Dome. Royal Arches. Washington Column.

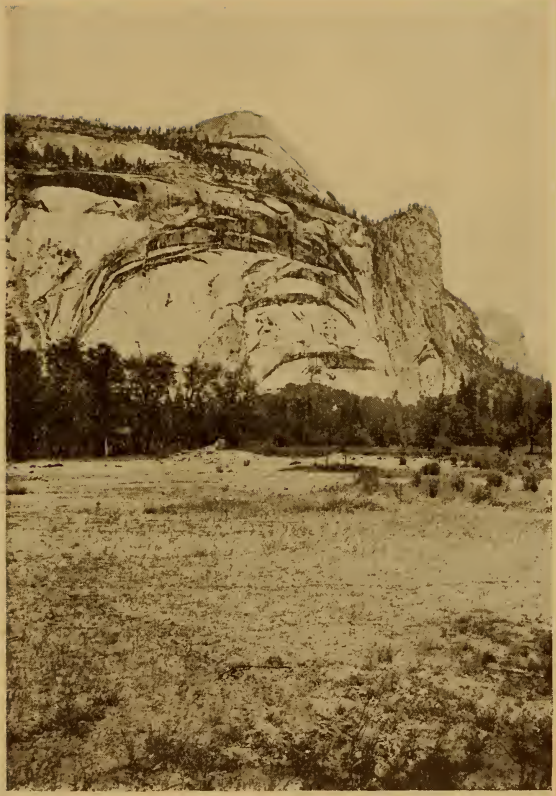
The North Dome, thirty-seven hundred and twenty-five feet high, is a great rounded mass of granite made up of huge concentric plates of rock overlapping each other.

Lower down on the face of the wall, where the edges have been broken off and carried away, these concentric plates form the great Royal Arches. These Arches show very plainly the concentric structure of the dome, the top of which is only accessible from the rear side.

Adjoining the Royal Arches is a fine shaft of granite known as the Washington Column.

The Half Dome.

The Half Dome, on the opposite side, facing Teneiya Canyon, is five thousand feet in height above the Valley, and is the loftiest mass of rock of those considered as a part of the Yosemite.



ROYAL ARCHES, NORTH DOME AND
WASHINGTON COLUMN

On the side fronting Teneiya Canyon it is absolutely vertical for nearly two thousand feet from the summit and then falls off in a steep incline to the bottom of the canyon.

On the opposite side the Half Dome has a rounded form at the top, and grows more and more steep to the bottom.

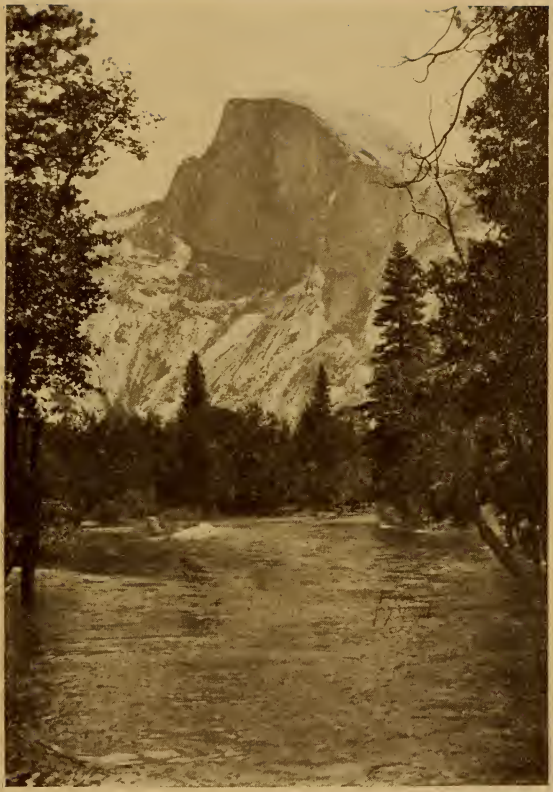
The whole appearance of this great mass of rock is that of an originally dome-shaped elevation with a very steep curve, of which a great part of the western half has been split off. This evidently took place while Teneiya Canyon was still occupied by the remains of the great glacier which at an earlier period filled it. This debris, falling upon the glacier, was carried a little further down and dropped when the glacier melted.

In the fall of the year 1876, George Anderson, then a resident of Yosemite, worked his way up to the top of the Half Dome with drills, iron eyebolts and

ropes, and was the first man to stand upon its lofty summit.

There is an area of many acres which can be safely traveled over on the top, and in many places, where soil has accumulated from the disintegrated granite, there are flowering plants and some small trees.

From the top of the vertical side fronting Teneiya Canyon there is a great open crack extending back into the Dome nearly one hundred feet. In dropping a small pebble into this crack it can be heard rattling down a long distance. This great fracture in the rock was undoubtedly made at the time the western part of the dome was split off. This great cataclysm I think must have been caused by some tremendous subterranean force upheaving this part of the earth's surface.



THE HALF DOME
5,000 feet

WATERFALLS IN YOSEMITE VALLEY.

Bridal Veil Fall.

THE Bridal Veil Fall, on the south side of the entrance to the Valley, is nine hundred feet in height, and is formed by a creek of the same name, which has its source about fifteen miles to the south in a series of meadows generally known as the Bridal Veil Meadows.

This waterfall is certainly one of the most interesting objects in Yosemite when seen about five o'clock in the afternoon, in the clear sunshine, illuminated by magnificent rainbows.

The upper part of the fall is a perpendicular descent of six hundred feet. It then descends in rapids three hundred feet to the level of the Valley.

It has its most charming and fascinat-

ing effect when at about two-thirds of its early spring volume, and when swayed back and forth by the wind, which constantly changes its appearance, there being no two minutes in succession when it looks the same. Late in the season it becomes a very small stream.

Ribbon or Virgin's Tears Fall.

The Ribbon or Virgin's Tears Fall is thirty-three hundred feet in height and is situated on the opposite side of the Valley from the Bridal Veil.

In the early part of the season it is a very wonderful and interesting waterfall, coming down in a deep recess in the face of the wall twenty-three hundred feet perpendicular to the great pile of talus, then one thousand feet in rapids till it nears its junction with the Merced River.

This waterfall is almost entirely overlooked, or at least little noticed by most visitors, on account of the far superior

THE BRIDAL VEIL
900 feet

and more beautiful appearance of the Bridal Veil Fall directly opposite.

Yosemite Falls.

The Yosemite Falls, about midway up the Valley on the north side, are perhaps in the early part of the season one of the most conspicuous and interesting features of Yosemite, being in plain view from the hotel, public camps, and business center of the Valley.

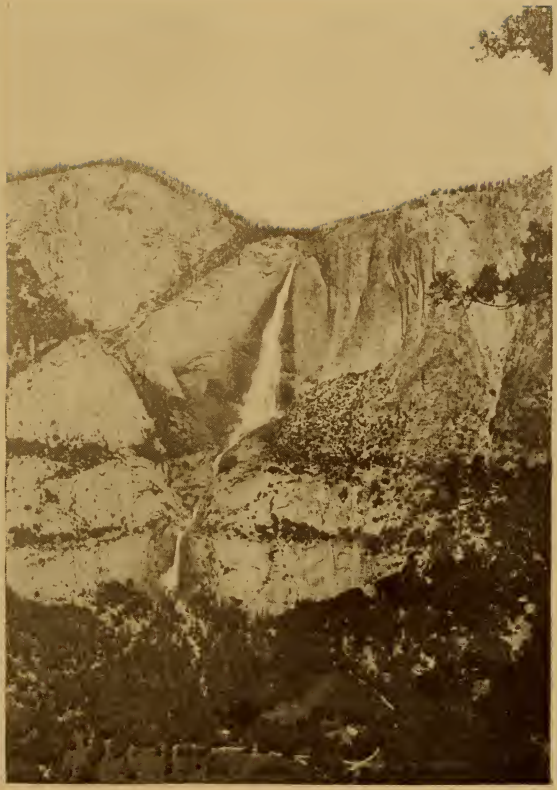
They are formed by the Yosemite Creek, which rises on the northwest side of the Mount Hoffman group about fifteen miles northeast of the Valley. Being fed entirely by the melting snow, its volume varies greatly at different times and seasons.

The Falls are in three distinct parts. The lip or edge of the Upper Fall is in round numbers twenty-six hundred feet above the Valley. This lip or edge, through centuries of erosion, has become a narrow circular depression in the

smooth polished granite over which the rushing water plunges in a perpendicular descent of sixteen hundred feet, striking on a solid ledge of granite about one-fourth of a mile back from the lower portion of the cliff. From here the wide spreading stream converges into a narrow gorge and plunges in a series of cascades down a descent equal to six hundred feet perpendicular until it reaches the top of the Lower Fall, where it makes a final plunge of four hundred feet to the base of the vertical precipice near the level of the Valley floor. All this can be plainly seen from the Glacier Point trail at Union Point, on the opposite side of the Valley.

The width of the stream at the top of the Upper Fall, at a medium stage of water, is about thirty feet, with a depth of two feet. This widens out towards the bottom to over two hundred feet.

One of the most striking features of this Fall is its swaying motion from one



YOSEMITE FALLS FROM GLACIER POINT TRAIL—Two miles distant

side to the other under the varying pressure of the wind, which acts with great force on so long a column.

Water in motion does not run in a steady even current, but flows in a series of waves. This is plainly to be seen in the Upper Yosemite Fall, and, as each successive wave descends, its crest separates into small streams which soon vanish in spray. These small streams are commonly called water-rockets. These two peculiar and very interesting features—the swaying and wave motions in the Upper Yosemite and Bridal Veil Falls—are not seen in any of the other falls of less altitude.

In the early part of the season, when the snow on the mountains in the near vicinity of the Valley is melting rapidly, the volume of water in the Upper Yosemite Fall is so great and heavy that it jars the ground a mile distant, frequently coming down with such force and

weight as to make a report like distant artillery.

Back of the bottom of this fall there is quite a large cave, which has probably been made by the eroding action of ice in the winter, and it may be possible that the great mass of water, when it strikes the solid ledge in front, causes a concussion of the air in this cave which aids in making these loud reports.

During the winter season a large amount of ice accumulates at the foot of the Upper Yosemite Fall. In the cold freezing nights large sheets of ice and great icicles are formed on the face of the vertical walls on each side of the falling water. When the sun shines bright and clear in the day time these great masses of ice loosen and fall to the bottom. The spray is also constantly falling in hail and snow, which forms a

NOTE.—The photograph on page 57 shows an ice cone five hundred and fifty feet high at the foot of Upper Yosemite Falls. The two small figures on the left-hand side are George Anderson and Galen Clark.

ICE CONE, UPPER YOSEMITE FALL
550 feet high

great cone-shaped mound. During some winters this mound grows to be more than five hundred feet high, and the great cave at the base of the fall is pressed solidly full of ice.

Wonderful ice formations are seen at the base of all the falls in winter.

Sentinel Fall.

Sentinel Fall, thirty-two hundred and seventy feet high, is formed by a small stream known as Sentinel Creek, which has its source in the Pot Hole Meadows about four miles distant on the south side of the Valley. This fall comes down in a succession of steep cascades very fine in the early spring, but it is usually dry by the latter part of July.

Royal Arch Fall.

The Royal Arch Fall has a descent of two thousand feet down a steep incline on the face of the wall at the western edge of the Royal Arches. It is a fine

waterfall early in the season, but is short lived, generally becoming dry in July.

Illilouette Fall.

The Illilouette Fall is located between Glacier Point and the Vernal Fall, at the entrance to the upper canyon of the Merced River, above the level of the Valley. It is seen from the trail going to the Vernal and Nevada Falls, and can also be seen, from above, on the trail from Nevada Fall to Glacier Point, which passes close to the top of the Illilouette Fall.

This waterfall never gets entirely dry. It is formed by the Illilouette Creek, which has its source in the Merced group of mountains, a lower part of the High Sierras.

Vernal Fall.

The Vernal Fall is three hundred and fifty feet high, and is one hundred feet wide at the top during the full flood vol-

VERNAL FALL
350 feet

ume, in the early part of the season. It is formed by the main Merced River.

This is one of the most perfect perpendicular water falls in Yosemite. On the south side, at the top, there is a huge slab of granite rock which forms a parapet nearly breast high, over which one may look down the face of the fall and the rapids below. From below we get the finest view from Lady Franklin Rock, and this view is the most interesting at a medium stage of water. A foot trail leads up from Lady Franklin Rock to the top of Vernal Fall. During the hours of sunshine in this locality, when passing through the dense spray near the foot of the fall, a perfect circular rainbow can be seen.

Above the Vernal Fall is the Emerald Pool, deep and placid, where the rushing river seems to stop for a moment of quiet rest before making its graceful plunge over the perpendicular cliff on

its rapid course past the Happy Isles to the vale of beauty below.

Next above the Emerald Pool is the Silver Apron, a broad white sheet of water swiftly gliding down the smooth surface of the inclined bed rock at a speed of nearly a mile a minute when the river is at its full spring flow.

Then come the Diamond Cascades, just below the trail bridge, where the whole river bursts with terrific force into scattered fragments from the outlet of the narrow deep smooth granite flume. The river rapids extend above this to the foot of Nevada Fall, forming a rare combination of wonderfully picturesque river scenery.

Nevada Fall.

The Nevada Fall is nearly one mile higher up the Merced River than the Vernal Fall, and is six hundred feet high. Near the top of the fall there is a projecting ledge of rock which throws

NEVADA FALL
600 feet

a part of the stream off a little to one side with a peculiar twist which adds considerably to its general effect. Below this the face of the wall is not quite perpendicular, but at a full stage of water this is scarcely noticed, as the great volume of water is forced so far out at the top that the front face of the fall is nearly perpendicular. Late in the summer, when the river is at its lowest stage, the whole stream of water glides down the broad smooth face of the wall in a never ending series of most exquisite long lace waves, forming the most fascinating object of beauty of its kind to be seen in Yosemite.

MIRROR LAKE.

THIS small sheet of water is not in the Valley proper. It is located at the entrance of Teneiya Canyon at the base of the great Half Dome. When seen in the morning before the sun rises it is an enchanting little lake environed by grand mountain scenery, all of which is seen mirrored in its apparently unfathomable depths.

One of the most interesting scenes is a mirror view of the sunrise from behind the Half Dome or adjacent cliff. At first a small portion of the sun's disk is seen as a bright star. In a moment it enlarges too bright to look at. By moving a few steps into a place of shadow the experience can be repeated, and by several changes of this kind many sunrises may be seen in a few minutes any fair morning.

MIRROR LAKE AND MT. WATKINS

TREES IN YOSEMITE VALLEY.

Cone-Bearers.

Pines.—The leaves of pines are needle shaped, enclosed in a sheath at their junction with the branch, and vary in numbers and length in different varieties.

Yellow Pine (*Pinus ponderosa*)—The leaves of this variety grow in clusters of three, and are dark green in color and average about six inches in length in full grown trees. On young thrifty trees they are two or more inches longer. Cones, when mature, before the scales enclosing the seeds dry and open, are about three inches in length and one inch in diameter.

This pine is often found two hundred feet in height and eight to ten feet in diameter, the average height of mature trees being about one hundred and sev-

enty-five feet with a diameter of six or seven feet.

Black Pine (*Pinus Jeffreyi*)—Only a few trees of this variety of pines are found in Yosemite. Its natural habitat is at a higher altitude. It is said to be a variety of the *Ponderosa*. Its leaves are in clusters of three, about six inches long, of a light green color with a bright silvery sheen. The cones are about five inches in length and three inches in diameter. The body and height of full grown trees are not quite equal to the *Ponderosa*.

Sugar Pine (*Pinus Lambertiana*)—This is a variety of the White Pine. Its leaves grow in clusters of five, about three inches long and lightish green in color. The cones are the longest of any of the pine-tree family, but vary very much in length on different trees and at different altitudes. The average length is about sixteen inches, but in many in-

stances they are found over twenty inches long. This tree gets the name of Sugar Pine from the fact that where the trees are burned deep into the heart a moist substance exudes and dries in white globules of a sweet taste, much like sugar. The Sugar Pine grows to about the same diameter and height as the *Ponderosa*. It is considered the most valuable lumber tree in California. There are but few of them growing in Yosemite Valley.

Tamarack Pine (*Pinus Murrayana*)—The natural habitat of this pine is at a much higher altitude than Yosemite, but there are a few growing in the Valley started from seeds brought down by flood waters. This pine has only two leaves about two inches long, in a fascicle. The cones are not much larger than a lady's thimble. The bark is very thin, which renders the tree easily killed by fire. It is not a good tree for lumber.

Douglas Spruce (*Pseudotsuga Douglasii*)—This tree is found quite plentifully in some parts of Yosemite. Its small narrow leaves, about one inch in length, are attached to the slender twigs in irregular order. The cones are about two inches long, with bracts exserted beyond the scales. This tree grows to a large size, six or seven feet in diameter and one hundred and fifty feet in height. It is considered one of the best of timber trees, on account of standing well the extreme conditions of wet and dry exposure.

White Fir (*Abies concolar*)—This is the only variety of fir growing in Yosemite Valley. It grows to a large size—five and six feet in diameter and over one hundred feet high. The small, narrow leaves, a little over an inch in length and light green in color, grow in regular close rows on each side of the slender branches. The cones are about three

THE HAPPY ISLES
Merced River

inches long and about one inch in diameter. The scales are not persistent like those of the pines and spruces; when fully ripe they fall to pieces.

White Cedar (*Libocedrus decurrens*)—This tree grows to a large size in Yosemite. It is found, in many instances, seven and eight feet in diameter and one hundred and fifty feet high. It does not have a regular cone. The seed vessel is small, about an inch in length and half an inch in diameter, with a scale on each side of a septum. Under each scale two seeds are matured with a permanent wing appendage. When the seeds are ripe the scales dry and open, and the seeds are scattered broadcast by the winds. The young trees very much resemble the *Arbor Vita*.

Oaks.

Black Oak (*Quercus Kelloggii*)—This tree is very common in Yosemite. Its wide-spreading branches and dome-

shaped top makes it a very conspicuous and ornamental part of the forest scenery. In the fall of the year its abundant green foliage turns to an orange color, adding much to the charm of the autumnal landscape. The acorns are highly prized by the Indians, who grind them into meal from which they make bread. Before using this meal it is put through a leaching process, which takes out all the bitter astringent quality.

Live Oak. (*Quercus chrysolepis*)—This oak grows around the borders of the Valley among the fallen rocks at the base of the walls. The wood, when well seasoned, is the hardest of any tree in California.

Other Trees.

Cottonwood (*Populus Balsamiffera*)—This tree grows on the banks of streams and borders of marshy meadows. It is not a true cottonwood, but gets its common name from the fine

white material, like cotton, which is shed from the seed pods when ripe. This, falling on the ground, gives the appearance of a recent small snow storm. The buds are viscid and aromatic in odor and are said to be medicinal in quality.

Alder (*Alnus viridis*) — This tree grows on the banks of the streams and in wet localities. In some instances it is found a good sized tree nearly two feet in diameter and fifty feet high.

Maple (*Acer macrophyllum*)—This is the only variety of maple found down near the floor of the Valley. It grows among the rocks at the base of the great walls. It never grows to a very large tree in Yosemite, the largest being only about one foot in diameter and forty feet high. It is remarkable for its large leaves, which in many instances are six inches or more wide. In the autumn its bright lemon-colored foliage makes it very conspicuous.

Quaking Aspen (*Populus tremuloides*)—This variety of poplar gets its name from the constant trembling of its leaves, which move with the slightest impulse from the air. It is a small tree in Yosemite. Its native habitat is at a higher altitude.

California Laurel (*Tetranthera Californica*)—This variety of the California Laurel does not often grow to be a large tree in Yosemite. It is more like a large shrub than a tree. Its leaves are of a bright glossy green in color and when crushed emit a strong, pungent odor quite similar to that of bay rum. The leaves are often used to protect woolen goods from the ravages of moths.

FLOWERING SHRUBS IN YOSEMITE.

Dogwood (*Cornus Nuttallii*)—Only a few of the most common and attractive shrubs will here be mentioned. One of these is the dogwood. In the month of May, with its large, white, showy flowers three inches in diameter, it is a pleasing sight never to be forgotten. Later on, in October, its brilliant colored leaves are even more attractive than its flowers.

Azalea (*Azalea occidentalis*) — This beautiful flowering shrub is very abundant along the banks of the Merced River and other streams and slough borders in Yosemite. It begins to open its white, fragrant blooms early in June, closely following the dogwood's decaying flowers. In some cold, shady places it may be found in bloom until late in July. The flowers are generally white, with a

yellow blotch on one of the lobes. In some rare instances the flowers have a very pretty pink tinge.

Manzanita (*Arctostaphylos glauca*)— This variety of the Manzanita (Spanish for "Little Apple") with its dark red bark and great number of ridged, crooked branches forming a symmetrical rounded top, is the most attractive and beautiful shrub in Yosemite. It presents the curious anomaly of having an evergreen foliage and a deciduous bark, the old bark exfoliating every summer when the new bark is formed beneath. This is green in color at first, but soon changes to dark red on exposure to the atmosphere and sunlight. This bark is as thin as fine paper. The Manzanita blossoms in the early spring. The flowers are small, white, fragrant, waxen bells in small clusters, in some instances slightly tinged with pale pink. The fruit is a small berry, and when ripe is

WILD AZALEAS

of a red color and has the taste or flavor of dried apples. The Indians make great use of it as an edible berry, and also make an excellent sweetish cider by crushing the berries and leaching water through the mass in one of their strainer baskets.

California Lilac (*Ceanothus integerrimus*)—This variety of the California Lilac is quite numerous along the rocky borders of Yosemite Valley. Its branches are of a green color. Its flowers are white, in dense oblong clusters from two to three inches in length. They are very fragrant, with the strong odor of wintergreen. The young growth of the branches also has the strong flavor of wintergreen or black birch. There is another variety of the *Ceanothus* growing in the sandy part of the Valley, near the cemetery, with pale blue flowers.

Spice Bush or Sweet-Scented Shrub (*Calycanthus occidentalis*)—This is an-

other one of the beautiful shrubs in Yosemite. It grows in rather wet, rocky places. The flowers are of a dark red or wine color, having a spicy, fragrant odor. This shrub is not found very plentifully around the Valley floor, the altitude being a little above its favorite habitat.

Wild Syringa (*Philadelphus*)—This, with its dense masses of pure white flowers, forms another of the attractive flowering shrubs in Yosemite. It resembles very much the cultivated syringa.

Wild Rose (*Rosa blanda*)—This variety is quite plentiful in Yosemite. The bushes are three or four feet high, well armed with sharp, curved thorns. Its flowers are of a pink color, and very fragrant.

Elder (*Sambucus glauca*)—This variety is very common in Yosemite. The stems are from six to eight feet high. Its flowers are white, in large flat-top

clusters. Its fruit is a small, dark-colored berry covered with a light-colored bloom. These berries are tart in flavor and make fine jellies. They are a great favorite with the Indians.

Choke Cherries (*Prunus demissa*)—This is a very common shrub in the Valley. It grows from six to ten feet high. The flowers are white, in dense clusters two to three inches long, emitting a strong and not unpleasant odor. The fruit is dark red in color, and very astringent until dead ripe. The Indians gather all they can get of them.

Thimble Berry (*Rubus Nutkanus*)—This is a variety of the raspberry. It is generally a low shrub, about three feet high, with large broad leaves. Its flowers are white, an inch in diameter. Its fruit is red and juicy, with a slightly acid, pleasant taste.

Willow—Willows are very numerous in Yosemite, along the banks of the Mer-

ced River and smaller streams, and in the marshy meadows. Their beautiful white silky catkins, as they emerge from their winter wrappings, are always a joyful sight as the heralds of the coming spring, proclaiming the resurrection to renewed life of all Nature's most charming features.

Wild Coffee (*Rhamnus Californica*) —This is a very common shrub in Yosemite. It is from six to eight feet high. It gets its name of Wild Coffee from the fact that the two seeds in the berry very much resemble the coffee bean, but that is as far as any resemblance goes. Upon careful analysis it is found to have none of the qualities of coffee. Its flowers are very small and inconspicuous, but the bark contains valuable medicinal qualities. For this reason it was called by the Mission Fathers *Cascara Sagrada*—the sacred bark. An extract from the bark is the most valuable laxative known.

Yerba Santa (*Eriodictyon Californicum*)—This shrub is about three feet high. Its flowers are purple. Its leaves are thick and glutinous, of a bitter aromatic taste, and are highly prized by the native Indians as a remedy for rheumatism, colds and fever.

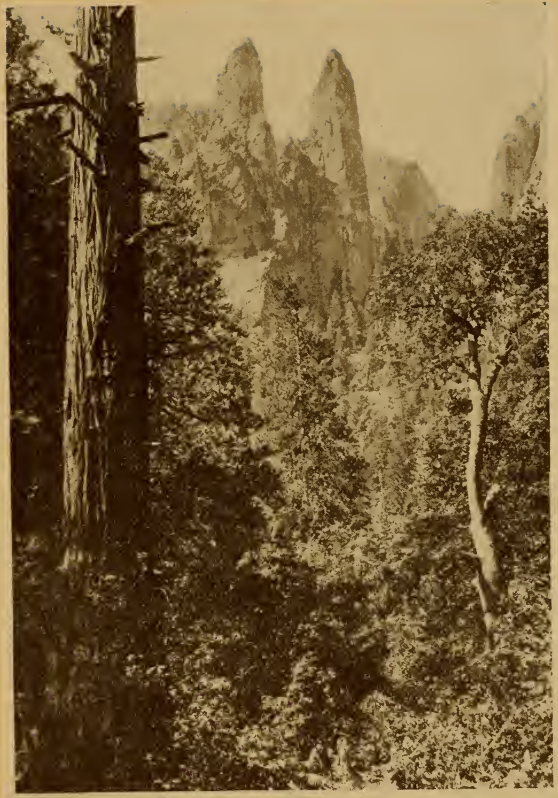
Service Berry (*Amelanchier alnifolia*)—This in Yosemite is a slender shrub three to six feet high. Its flowers are white. Its fruit is a berry nearly black, sweet and juicy, and highly prized by the Indians.

FLOWERING PLANTS IN YOSEMITE.

THERE are said to be over one hundred different kinds of flowering plants in Yosemite. Only a very few of them will be here mentioned, and, as the author is not a botanist, no attempt will be made to give a minute botanical analysis.

Persons visiting Yosemite who wish to study the flowers there, should provide themselves with Mary Elizabeth Parsons' illustrated book on "Wild Flowers of California." It is one of the best books of the kind published for beginners in the study of flowers.

BLACK-EYED SUSAN (*Hellenium grandifolia*)—This, with its numerous showy yellow flowers, is very abundant along the lowlands of the streams and marshy meadows.



THE CATHEDRAL SPIRES
2,678 feet

Shooting Stars or Wild Cyclamen (*Dodecatheon Meadia*)—This is a very early spring flower growing in wet ground. Its stems are a foot or more high. These flowers are peculiar in appearance, are of varying color, and very beautiful.

Small Tiger Lily or Alpine Lily (*Lilium parvum*)—This lily grows in rich, moist soil and wet meadows. Its rich green leaves are in a succession of whorls up the stem, which is sometimes six feet high and crowned with a head of numerous small orange-colored flowers. It blooms during the months of July and August.

Rein Orchis (*Hebenaria leucostachys*)—This is found in the wet meadows, two to three feet high. Its flowers are pure white, in a long dense spike. It blooms late in the summer.

Yellow Pond Lily (*Nuphar Advena*)—The only place in Yosemite where this

lily is found is in a little pond a short distance from the Sentinel Hotel, on the opposite side of the river. In the higher range of mountains it is found in many small shallow ponds.

The Evening Primrose (*Enothera biennis*)—This is very common in Yosemite, growing from two to three feet high, terminating in a long slender head with a series of upright buds in various stages of development. It begins blooming at its base about sunset, one or more buds bursting from their close wraps and developing within about five minutes into large yellow flowers, which wither next day and are followed by new ones every evening.

Pussy's Paws (*Spraguea umbellata*)—This grows in sandy soil. It flowers in dense spikes of a rose color, growing in a bunch much resembling a kitten's foot, hence the name "pussy's paws."

Lupines (*Lupinus bicolor*)—Lupines

are very abundant in Yosemite, growing in sandy soil. Nearly all of them have bi-colored flowers—blue and white.

Indian Paint Brush (*Castilleia latifolia*)—This plant, with its elongated bright scarlet head, is very conspicuous among its vivid green surroundings. It blooms in June.

Collinsia (*Collinsia tinctoria*)—The Collinsia, with its delicate showy white-and-purple blossoms arranged in many storied rings, grows in the dense shade of the great black oaks in Yosemite. When picking the flowers the sap of the stem stains the fingers a brown color.

Godetia (*Godetia amoena*)—In early summer this plant, with its delicate dark pink flowers blotched with bright crimson, is one of the most beautiful and showy flowers in Yosemite. The flowers close up at night and open the next day. It is sometimes known as "Farewell to Spring."

Yarrow (*Achillea millefolium*)—The yarrow is very common in Yosemite, but its white flowers, in a dense flat cluster, are seldom honored by a place in a choice bouquet. It was formerly in high repute for its varied medicinal qualities.

Great Willow Herb (*Epilobium spicatum*)—This grows very luxuriantly in some parts of the Valley, being from four to seven feet high, terminating in a great spike of very showy pink flowers which commence blooming late in July. Its roots are said to contain valuable medicinal qualities of a tonic character.

Coreopsis—A variety of wild coreopsis is seen in all parts of Yosemite Valley, from one to three feet high. It has bright yellow flowers, which partly close at night, opening out early the next morning, and seem to turn their bright faces towards the sun throughout the day, apparently being devout sun worshipers.

Snow Plant (*Sarcodes sanguinea*)—This blood-red and brilliantly attractive plant is met with in a few localities in Yosemite. The stout succulent stem, covered with waxlike, bell-shaped flowers, and delicate, semi-transparent, slender leaves that intertwine among the bells, all being blood red, makes it the most conspicuous and beautiful flower in the Sierras. It is met with on all the routes to Yosemite and the Big Trees. The name it bears might give the impression that it grew in the Sierra snows, but this is not the case. It never shows its red crown until several days after the winter snow has melted away. Sometimes, however, a snow storm may come in the spring after it is up in full bloom. It is thought by some botanists to be a parasitic plant, they claiming that it only grows on the decaying roots of some coniferous trees. This has been well proved to be untrue.

Other Flowering Plants — Golden Rod (*Solidago Californica*), Blue Larkspur (*Delphinium*), Columbine (*Aquilegia truncata*), Golden Star (*Bloomeria aurea*), Blue Milla (*Brodiaea laxa*), blue and other varieties of the Penstemon, blue, yellow and white violets, and many other very beautiful flowering plants, are well represented in Yosemite. The open expanse of green grassy meadows, bespangled with a multitude of bright colored flowers, is a most charming feature of the landscape.

YOSEMITE VALLEY IN WINTER

FERNS IN YOSEMITE.

THE many kinds of ferns, large and small, to be found on the floor of the Valley, and on the rocky talus at the base of the great walls that surround it, form one of the minor charms of Yosemite.

THE COMMON BRAKE (*Pteris aquilina*)—This is found in all parts of the floor of the Valley and in some localities it attains a height of four feet, with broad spreading fronds.

WOODWARDIA RADICANS—This beautiful large fern is found in wet rocky places.

MAIDENHAIR (*Adiantum pedatum*)—This grows at the base of the great waterfalls, and wet shady cavities and clefts in the rocks at the base of the walls.

OTHER VARIETIES—*Pelloea densa, Pelloea Bridgesii, Pelloea macronata, Chei-*

lanthus gracillima, Cystopteris Fragilis, the gold-back *Gymnogramme Triangularis,* the moss-back *Woodsia Scopulina,* and several varieties of the shield fern, are found among the rocks at the base of the surrounding walls. There are many other beautiful ferns whose names I have never learned.

HINTS TO YOSEMITE VISITORS.

THE following paragraphs, containing information and suggestions likely to be of value to tourists in Yosemite, are re-printed, with some additions, from the author's book on "The Indians of the Yosemite," published in 1904:

Secure stage seats in advance.

Take only hand baggage, unless for a protracted visit. For a short trip, an outing suit and two or three waists, with a change for evening wear, will be found sufficient. The free baggage allowance on the stage lines is fifty pounds.

Men will find flannel or negligee shirts the most comfortable.

In April, May and June wear warm clothing and take heavy wraps. In July, August and September wear medium clothing, with light wraps. In October

and November wear warm clothing, with heavy wraps. The nights are cool at all seasons.

Dusters are always advisable, and ladies should provide some light head covering to protect the hair from dust. Sun bonnets are frequently worn.

Short skirts are most convenient.

Divided skirts are proper for trail trips, as ladies are required to ride astride. Heavy denim for skirts and bloomers is very satisfactory. Such skirts can be hired in the Valley.

Waists of soft material and neutral shades are appropriate. Avoid white.

Something absolutely soft for neck-wear will be found a great comfort, both by men and women.

Leggings, stout comfortable shoes and heavy, loose gloves, will be found very serviceable.

A soft felt hat is preferable to straw. One that will shade the eyes is best. A

cloth traveling cap is the worst thing to wear.

Smoked glasses will sometimes save the wearer a headache.

Except in March, April, May, November and December, an umbrella is apt to be a useless encumbrance.

If the skin is sensitive, and one wishes to avoid painful sunburn, the use of a pure cream and soft cloth is preferable to water, and far more efficacious.

A week is the shortest time that should be allowed for a trip to Yosemite. Two weeks are better. The grandeur of the Valley cannot be fully appreciated in a few days.

On walking trips, let the clothing be so loose as not to be binding on any part of the body. A light strong staff four or five feet in length will be of much service both in going up and down the trails.

In starting on the up-grade don't

hurry; go slowly; stop often for a minute or two.

Don't talk while walking; keep your mouth shut, and breathe through your nose. Talk all you wish while stopping for a short rest.

Your lungs will soon get into a more expansive condition and you can increase the distance between resting spells, and will arrive at your destination in good condition to enjoy the magnificent views.

Those not accustomed to staging or mountain climbing should make some allowance in their itineraries for rest. Many visitors spoil their pleasure by getting too tired.

Take a little more money than you think will be needed. You may want to prolong your stay.

Hunting, or the possession of fire-arms, is not permitted in the Yosemite National Park. Fishing is allowed, and in June and July an expert angler is

likely to be well rewarded. Rods and tackle may be hired in the Valley.

There is no hardship, risk or danger in any part of the Yosemite trip. Many old people and children visit the Valley without difficulty.

A knowledge of horsemanship is not needed for going on the trails. The most timid people make the trips with enjoyment. Some of the finest views can only be obtained in this way.

There is a laundry in the Valley.

There is a barber shop.

There is a postoffice, telegraph and express.

There is a general store and places for the sale of photographs, curios and Indian work.

Treat the Indians with courtesy and consideration, if you expect similar treatment from them. Do not expect them to pose for you for nothing. They are asked to do it hundreds of times

every summer, and are entitled to payment for their trouble.

Kodak films and plates can be obtained in the Valley.

Developing and printing are done in the Valley.

TAKE YOUR CAMERA.